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**The Taiwan Strait:
The Race for Sea Control**

By

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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract

The People's Republic of China (PRC) desires to unify the Republic of China (ROC) into "One China" by peaceful means. Recently, the PRC's Anti Secession Laws warn of armed conflict against the ROC in the event of any move towards independence. The PRC will use the lack of "strategic depth" and key physical characteristics of the Taiwan Strait to launch a surprise attack in an attempt to reclaim the island nation. PRC military action to subjugate Taiwan will focus on sea control in the Taiwan Strait due to the strategic access it affords. Once temporary local sea control in the Taiwan Strait is established, it will be the U.S. Seventh Fleet that will attempt to defeat, deny, and deter the PRC's military forces. Moreover, the ability of the U.S. Seventh Fleet to engage the PLAN in a battle for sea control is questionable, due to superior numbers of PLAN undersea warfare assets and the Seventh Fleet's lack thereof. As a result, the most effective course of action would be a pre-emptive strike on the PRC before *they* can launch their own, against the ROC.

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The Security Situation

Since the establishment of the Republic of China (ROC) on Taiwan in 1949, the issue of “one China” has been at the fore in world politics. From Mao Zedong to Hu Jintao, People’s Republic of China (PRC) leaders have had to deal with the possibility of armed conflict with an island nation it calls its own, allied with a foreign power.

On March 14, 2005 the Chinese National People’s Congress passed the Anti-Secession Law, consisting of ten articles codifying their position on Taiwan. Although *peaceful* unification of Taiwan is desired, the option for armed subjugation is spelled out in Article Eight. It states that “the State Council and CMC ‘shall decide on and execute’ non-peaceful means to ‘protect China’s sovereignty and territorial integrity’ if ‘secessionist forces...cause the fact of Taiwan’s secession from China,’ if ‘major incidents entailing Taiwan’s secession’ occur, or if ‘possibilities for peaceful reunification’ are exhausted.”¹

There is no published American position that singles out nuances when juxtaposed with China’s anti-secession laws. However, the Taiwan Relations Act of 1979, when coupled with the President’s National Security Strategy, provides a means for comparison. The Taiwan Relations Act declares that “peace and stability in the area are in the political, security, and economic interests of the United States and are matters of international concern and to consider any effort to determine the future of Taiwan by other than peaceful means, including by boycotts or embargoes, a threat to the peace and security of the Western and Pacific area and of grave concern to the United States.”² In September 2002, President Bush singled out China in the most recent National Security Strategy: “There are, however, other areas in which we have profound disagreements. Our commitment to the self-defense of Taiwan under the Taiwan Relations Act is one. Human rights are another.”³

The most recent U.S. Department of Defense (DOD) report to Congress surmises that China uses the term “active defense” to describe its national military strategy. Once Beijing determines that hostilities have begun, the evidence suggests the characteristics of “active defense” are distinctly offensive. The report adds that the People’s Liberation Army (PLA) text, *The Study of Campaigns* (Zhanyi Xue), published in 2000 explains: “While strategically the guideline is active defense, in military campaigns, though, the emphasis is placed on taking the initiative in active offense.”⁴

Taiwan represents both an impediment to China’s freedom of maneuver within its littoral seas and the missing sentinel tower in its seaborne Great Wall.⁵ The most recent PRC White Paper on National Defense states: “While continuing to attach importance to the building of the Army, the PLA gives priority to the building of the Navy, Air Force and Second Artillery Force... for winning both command of the sea and command of the air, and conducting strategic counter-strikes.”⁶ Responsibility for achieving command of the sea and air in the Taiwan Strait will rely on the ability of the People’s Liberation Army Navy (PLAN) to achieve temporary local sea control in the Taiwan Strait.⁷

The United States figures as the bete noir in PLAN scenarios, and determination of doctrine, as well as operational planning, must be based on whether the U.S. Navy and Air Force are likely to be involved.⁸ Chinese naval strategists appear to understand the vast gulf in capabilities between the PLAN and the U.S. Navy.⁹ As a result, PLAN planners should be expected to try to seize the initiative in an operational situation where the United States might be a participant.¹⁰ They will focus on getting the first blow.¹¹

China's Threat to Taiwan

Beijing's most recent white paper singles out Taiwan as a focal point for Chinese force structure. It points out that the sacred responsibility of the Chinese armed forces is to stop the "Taiwan independence" forces from splitting the country... Should the Taiwan authorities go so far as to make a reckless attempt that constitutes a major incident of "Taiwan independence," the Chinese people and armed forces will resolutely and thoroughly crush it at any cost.¹²

Overall, the PRC's military possesses a superior numerical advantage juxtaposed against ROC forces. As expected, due to the large population base, the PRC has a larger conventional army, almost an 8:1 advantage.¹³ The majority of the PLA forces are not, however, across the Taiwan Strait. Approximately one quarter of PLA troops are stationed close enough to the Taiwan Strait area to be considered a threat. Furthermore, the troops along the Taiwan Strait do not have the necessary amphibious lift capability to launch a *large scale* amphibious assault against the ROC. The recent U.S. DOD report estimates there are 43 medium and heavy amphibious lift ships belonging to both the East and South Sea Fleets.¹⁴ These amphibious lift ships would be able to transport only two marine brigades and their equipment, around 12,000 troops.¹⁵ Moreover, a large scale amphibious invasion would involve an airborne assault. Though the PLA has three airborne divisions of about 10,000 soldiers each, the PLA Air Force (PLAAF) does not have sufficient airlift capability to deploy the force.¹⁶ Although counter to conventional military logic, the PRC could use commercial shipping and aircraft in a combined invasion.

The PLAAF and PLAN possess superior numbers of fighters and bombers. With over 800 aircraft able to reach Taiwan without refueling, the PRC outnumbers the ROC Air

forces 2:1, not considering the other PRC air assets. Fighter to fighter ratios are approximately 3.5:1 favoring the PRC, yet are down to 1:1 when only accounting for aircraft within un-refueled distance.¹⁷

One fact not in the most recent DOD report, however, is the number of PLAN sea mines. It is the sea mine that poses a critical asymmetric threat to a Joint Task Force (JTF) and the PLAN should be given credit for having thousands of sea mines. Furthermore, the export of the EM-52 rocket boost mine to Iran several years ago highlighted modern advances in PLAN mines.¹⁸ Also not included in the figures, perhaps due to the inability to assess the numbers, are the PRC's fishing and merchant vessels that could be called upon to engage in mine warfare.

Coupled with the sea mines, the PLAN possesses the largest number of submarines available in the potential area of operations (AOR). Currently the PLAN is assessed to have 51 diesel and 6 nuclear attack submarines (SSNs). Although numerically superior to the United States' SSNs, the majority of PLAN submarines are older, lacking modern equipment and adequate training for their crews. PLAN leadership will no doubt use the overwhelming numbers to their advantage, leading U.S. SSNs into a "submarine ambush." Furthermore, the sheer numbers of PLAN submarines will allow the rapid mining in Taiwan's adjacent waters. Moreover, analysts routinely discount the capability of Chinese submarines, yet they are able to transport and sow approximately 30 mines per boat.¹⁹

Perhaps the most immediate threat to Taiwan is that of a cruise missile attack. The PRC's entire missile inventory has the capability to strike Taiwan. In the category of Short Range Ballistic Missiles (SRBM), a conservative estimate is 70 CSS-6 and 100 CSS-7

missiles. Furthermore, when adding the SRBMs to the intermediate and longer range missiles, the PRC possesses approximately 250 missiles.²⁰

Taiwan's ability to defend against a PRC cruise missile attack is inadequate. In a 2005 report released to the press, the [ROC] National Defense Ministry claims that about 70 percent of Taiwan's population will be safe from a Chinese attack with the proposed purchase of advanced PAC-3 "Patriot" systems.²¹ It states that,

Taiwan has [already] deployed 200 PAC-2 interceptors in northern Taiwan to protect the capital [Tapei]. With the procurement of three additional PAC-3 batteries with 384 missiles, a total of 584 missiles will be deployed in northern, central and southern Taiwan, and major cities and military facilities of the west coast would be under the protective umbrella of the theater missile defense system ...²²

The article also states that [in] the "two plus two theory," a defender must simultaneously launch four missiles... for each incoming missile in order to have a 95 percent probability of intercepting it...²³ Using this information, it is clear that even with conservative estimates Taiwan would need no less than 1000 anti-missile projectiles for Taiwan to be adequately protected.

The U.S. Seventh Fleet

In the event of hostilities in the Taiwan Strait, the United States will be justified to respond militarily to defend the ROC. Ultimately, responsibility to defeat and deter the PRC military will fall upon Commander, U.S. Pacific Command (PACOM). Reporting to PACOM, the Commander, U.S. Seventh Fleet (C7F) will be the supported commander for any combined operation to defend Taiwan and deter further PRC aggression. C7F will lead the fight while embarked in USS Blue Ridge (LCC 19), currently forward deployed to

Yokosuka, Japan.²⁴ Supporting the fight, C7F will have approximately 40-50 ships, 200 aircraft and about 20,000 Navy and Marine Corps personnel in the U.S. Seventh Fleet. This includes forces from bases in Japan and Guam, as well as rotationally-deployed forces based in the United States.²⁵ Moreover, as part of the combined operation, C7F will have Commander, Battle Force Seventh Fleet (CTF 70). CTF 70, also home ported in Yokosuka, will sortie on Seventh Fleet's aircraft carrier, currently USS KITTY HAWK (CV 63).²⁶

Along with KITTY HAWK and BLUE RIDGE, C7F will have one other aircraft carrier, 4-5 fast attack submarines, 3-5 Aegis guided missile destroyers, 4-8 amphibious and transport ships, 5-10 destroyers and frigates, 4-6 logistics and support ships, 1 submarine tender, 1 salvage ship, and 2 mine counter measures ships.²⁷ The majority of these, however, are not deployed in theater, as most will be in transit from their ports in the United States or assigned to the U.S. Fifth Fleet in the Middle East.

Key Physical Characteristics of the Theater

With over 930 miles of coastline, Taiwan is situated just over 100 miles from China, with the Pescadores a mere 80 miles. The majority of the population is situated on the west coast. As an island nation, Taiwan relies heavily on international trade for existence, from oil to food; Taiwan's life blood is its adjacent seas. Moreover, four out of the top six Taiwanese international ports are situated on the Taiwan Strait.

Taiwan's *climate* will directly affect the timing of PRC aggression. It can be best described as monsoonal and is a mirror image of the southern PRC mainland. The island is affected by two monsoon seasons, the northeast and southwest. The northeast monsoon season runs from November to April and the southwest from May to October. During the

southwestern monsoon the Taiwan Strait will be covered by stratus and stratocumulus clouds, varying in intensity from a high in July to a minimum in October. Throughout the northeast monsoon season, cloud cover over the Taiwan Strait will be minimal.²⁸ ROC Air Force (ROCAF) fighters will be expected to bear the brunt of destroying PLAN surface vessels in the Taiwan Strait, yet the ROCAF's effectiveness will be marginal in the summer months. The AGM 65 Maverick missile variant carried by ROCAF aircraft is infrared guided, with a marginal seeker field of view and limited detection ranges. The high humidity, rain, and cloud cover will require aircraft to operate at low altitudes, with pilots focusing on the cockpit displays for visual cuing against moving sea targets. As a result the ROC Air Force's success will be *extremely* limited versus the PLAN's surface ships.²⁹

A large cluster of Taiwan's international ports are directly affected by the southwest monsoon season; Kaohsiung, Anping, and Taichung. Between May and October these three ports receive an *average* of 15 millimeters [.59 inches] of rain a day.³⁰ Statistically it should rain between one third and one half of each month in the monsoon seasons.³¹ At the same time the precipitation amounts and average days of rain would be inversely proportioned around the ports of Suao, Hualien, and Keelung, as they are in the northeast monsoon season. Moreover, Taiwan will receive several typhoons during the southwest monsoon season, showering the island with up to one foot of rain in a day. The probability of high winds and sea states is greatest during the southwest monsoon season, hindering the operation of surface vessels or aircraft. A surface or airborne asset will not operate during a typhoon and surface vessels will seek a protected harbor or river for sanctuary.³²

If the PRC could choose an optimum time period for an engagement using undersea assets coupled with a missile strike it would be in later summer, more specifically late August. At this time the Pacific Ocean's tropical cyclone track is over southern Taiwan.³³ Choosing this window of opportunity would make it difficult for the U.S. Seventh Fleet to conduct cyclic operations off southern Taiwan's adjacent seas due to monsoonal climate and the near certainty of typhoon activity. On the other hand, operations off northeastern Taiwan, in the Pacific Ocean, would be relatively unaffected during August. Moreover, the PRC will be expected to employ PLAN submarines in adverse weather conditions year round, regardless of inclement weather, thereby concealing their movement. Speaking to reporters after a patrol, a PLAN submarine captain explained..."we took advantage of bad weather as cover, which did well in ensuring the concealment of our submarine."³⁴ Transitioning into September the tropical cyclone track will shift south, however it will bring 12 foot sea states greater than 10% of the time throughout Taiwan's adjacent seas, affecting all sea based operations.³⁵

PLAN leadership will utilize the *oceanographic* features of Taiwan's adjacent seas for undersea warfare. In its entirety, the Taiwan Strait has an average depth of 185 feet. Off the east coast of Taiwan, submarine slopes plunge down to the Pacific Ocean at a grade of 1:10 reaching a depth of more than 4,000 meters [13123 feet] about 50 kilometers [31 miles] from the coast.³⁶ From the northwestern most point on Taiwan to mainland China, the shallowest depth of the Taiwan Strait is 141 feet, the deepest, 311 feet. Between southwestern Taiwan and China the depths are varied. The Taiwan Banks, with depths as shallow as 27 feet, are halfway between the southern ROC and PRC. PLAN leaders would divide the southern Strait in two, an eastern and western operating area. The western area

would be closer to the PRC mainland, and well in the surface to surface weapons envelope of shore installations. Furthermore, if JTF naval assets opt to enter the western operating area they will be harassed by PLAN missile patrol boats operating from China's littorals. The advantage gained by using the Taiwan Banks will allow the PLAN to concentrate undersea warfare assets southeast, towards Taiwan's southernmost point. From Taiwan's southernmost point, the Bashi Channel, to the Taiwan Banks (due northwest), the depths begin at less than 328 feet off the southern coast and increase to approximately 6,561 feet 60 miles off of the port of Kaohsiung, then decreases approaching the Taiwan Banks to 52 feet. Southwest of this line the water depths increase to over 10,000 feet 90 miles south of Kaohsiung. It is in these deep waters, away from a potential submarine and mine blockade that the PLAN submarine commanders would expect to find either the USS CITY OF CORPUS CHRISTI (SSN 705) or the USS HOUSTON (SSN 713).³⁷

The PLAN has thousands of conventional sea mines designed for use in the shallow waters of the Taiwan Strait, some based on Soviet design and some produced indigenously. Furthermore, the more advanced rocket rising would be the weapons of choice for the deeper waters off the east and southwest coast. With a 320 kilogram [705.427 pound] warhead and its ability to be employed in the deeper waters of the Pacific Ocean, it would prove difficult to locate and prosecute, tying up assets needed for sweeping the Taiwan Strait entrances.³⁸

During the summer monsoon season (southwest), currents from the Taiwan Banks, located approximately 60 miles east of Anping Harbor, flow northeast through the Taiwan Strait, averaging about 15 to 22 miles per day. During the winter monsoon season (northeast), the currents flow in the opposite direction, from the northeast to the southwest of

the Taiwan Strait, at 18-48 miles daily. These numbers will increase substantially in the event of a typhoon or monsoonal activity.³⁹

Chinese diesel submarines, less expensive in comparison to U.S. SSNs, will more than likely be found operating in the shallow waters of the northern Taiwan Strait and close to the Taiwan Banks. As one analyst notes:

Shallow water is ideally suited for [Chinese] submarine operations... [They] can hide between the layers of the underwater thermals and maneuver among the rocks and shoals, where acoustics are clouded.⁴⁰ Furthermore, shallow depths, considered to be less than 200 meters [656 feet] provides severely disadvantageous conditions for U.S. SSN employment, weapons, and sensors.⁴¹

The prominent characteristic of Taiwan's *topography* is the central range of high mountains running from the northeast corner to the southern tip of the island. Steep mountains over 1,000 meters [3280 feet] high constitute about 31 percent of the island's land area.⁴² The steep mountain slopes on eastern Taiwan would prove difficult for a PLAN commando insertion or amphibious assault. Moreover, the majority of Taiwan's west coast is comprised of flats and shoals, ill-suited for a conventional amphibious assault. One area that would be suitable for an amphibious invasion would be Taiwan's southwestern coast. PLAN assets would travel south of the Pescadores, between the Taiwan Banks, protected by a nearby submarine and mine blockade to the south while enjoying a 160 mile buffer to the northern approach to the Taiwan Strait.

The Scenario

In the 2005 Annual Report to congress, the Office of the Secretary of Defense gives five possible scenarios regarding Chinese methods for re-claiming Taiwan; persuasion and coercion, limited force options, air and missile campaign, blockade and amphibious invasion.⁴³ A less recent, yet relevant, U.S. DOD annual report to Congress foretells PLAN

operations likely would include mine laying and deploying submarines and surface ships to enforce any blockade. It says,

Barring third party intervention, the PLAN's quantitative advantage over Taiwan's Navy in surface and sub-surface assets would probably prove overwhelming ...[ROC] forces probably would not be able keep the island's key ports and SLOCs open in the face of concerted Chinese military action...[Taiwan] would have difficulty defeating a blockade supported by China's large submarine force.⁴⁴

The most recent DOD report does not portray the PLAN as being such a threat. Moreover, U.S. analysts now discount the PLAN, assessing, "...any attempt at a close-in blockade or operations on the east side of Taiwan would strain the PLA Navy, which lacks significant replenishment and open ocean surveillance capabilities."⁴⁵

Based on superior PLAN, PLAAF, and surface-to-surface missile assets, the lack of adequate amphibious and airborne capabilities, the PRC will execute a combined assault using submarine warfare, sea mining, and a coordinated missile strike. The PLAN's use of mining to close Taiwan's major naval bases would hinder their ability to sortie into its adjacent seas. Offensive mining operations would close off the narrow south and wider north entrances to the Taiwan Strait. Due to the threat of mines, whether real or apparent, CTF 70's arrival into the Joint Operations Area (JOA) would stall, waiting for the completion of mine clearing operations in the approaches to Yokosuka, Sasebo, and Guam.

Another aspect of a sound PLAN mine strategy would be enclosing Taiwan's major ports of arrival for oil. According to January 1, 2005 estimates by the *Oil and Gas Journal*, oil consumption for 2005 is estimated at 1,045,000 barrels per day (bbl/d), net imports are 1,036,596 bbl/d.⁴⁶ Based on the *Oil and Gas Journal's* projections for oil consumption and imports, only 8,404 bbl/d are domestically produced. Key physical objectives would be the ports of Kaohsiung, Keelung, Taichung, Hualien, and Suao.⁴⁷ Shutting down these ports

would instill panic among the ROC populace as they are the ports of arrival for all of the ROC's oil imports.⁴⁸

PLAN mining off Taiwan's east coast could prove costly in terms of time taken to clear just a small segment of the Pacific to establish a carrier operating area (CVOA). One mine strike on a U.S. SSN or CVN would prove catastrophic. Beginning with the Korean War, through the Vietnam conflict and the Gulf War, 14 U.S. Navy ships were either damaged or sunk by enemy mines. Comparatively, during this same 44-year period, only one U.S. Navy ship was damaged by a missile, another by a torpedo, and two during aerial attacks.⁴⁹

The most effective way for China to conceal the sowing of mines in Taiwan's adjacent seas would be by the use of submarines as Taiwan lacks adequate ASW capabilities. Reportedly, only 6 of Taiwan's 26 S-2T Tracker ASW aircraft are operational and the four WWII vintage diesel submarines are not adequate to protect Taiwanese littorals.⁵⁰ Furthermore, once the mines are laid to Taiwan's Naval Port's approaches, it would be inconceivable that the ROC's Navy would be able to sortie. The effect of a first strike using Chinese undersea assets is left to analysts to discern, but a pragmatic view would be that even a very few ship sinkings would prompt insurance brokers to revoke their coverage of merchant shipping, and commerce at Taiwan's two biggest ports...would grind to a halt.⁵¹

The U.S. Seventh Fleet in the Fight for Sea Control

Assuming the success of the aforementioned scenario, C7F will be engaged in *sea control* operations.⁵² If PLAN submarines were successful in sowing mines at the northern and southern avenues of approach into the Taiwan Strait, set up a submarine blockade, and

achieved air superiority, they will have achieved *local temporary sea control* in the Taiwan Strait. Unfortunately lessons learned from Operation DESERT STORM have not been applied in regards to sea control, leaving C7F without the proper vessels to clear PLAN mine fields and submarine blockades without suffering catastrophic losses.⁵³

Due to its ability to effectively engage in various sea control missions, the platform of choice for C7F will be the Oliver Hazard Perry (FFG-7) class frigate.⁵⁴ Out of the fleet of FFG-7 class ships, only two are forward deployed in Yokusuka, Japan, the USS GARY (FFG 51) and USS VANDERGRIFF (FFG 48). Along with the USS PATRIOT (MCM 7) and USS GUARDIAN (MCM 5), both Avenger-class mine countermeasure ships, the two Oliver Hazard Perry-class frigates at Yokusuka make up the bulk of C7F's most effective sea control vessels.⁵⁵

Aside from the two Avenger-class minesweepers in the U.S. Seventh Fleet's inventory, there are two with the U.S. Fifth Fleet in the greater Middle East, and ten in Ingleside, Texas. Along with the Avenger-class, the U.S. Navy possesses twelve Osprey-coastal class ships, two in Manama, Bahrain and ten in Ingleside, Texas.⁵⁶ Overall, these platforms will be no factor in the scenario; at 10 knots [6.213 miles per hour] their transit time will be upwards of 60 days.⁵⁷

The five Arleigh Burke-class guided missile destroyers home ported in Japan would be an integral part of sea control operations, but after seeing the USS COLE (DDG 67) crippled by a small speed boat in Yemen, operations in mine infested waters could prove catastrophic for the ship's weak skin. Furthermore, out of the *five* Arleigh Burke-class ships belonging to the U.S. Seventh Fleet, only one is a Flight IIA, USS LASSEN (DDG 82).⁵⁸

The U.S. Navy's airborne mine sweeping platform is the MH-53E. There are approximately twenty MH-53Es in the U.S. inventory, divided between two integrated Helicopter Mine Countermeasures Squadrons (HM), each comprised of six active duty and four reserve MH-53E Aircraft -- HM-14, Naval Base (NB) Norfolk, Virginia; and HM-15, Naval Air Station (NAS) Corpus Christi, Texas.⁵⁹ Although these squadrons are based in the continental United States, there are MH-53Es deployed throughout PACOM's AOR that will be called upon to hunt mines, although in limited numbers.

Unfortunately, finding and destroying PLAN submarines will prove to be just as difficult as finding its mines. In a speech before a select group of defense contractors, Vice Adm. John Grossenbacher, now retired, observed, "our ASW capabilities can best be described as poor or weak."⁶⁰ The elimination of the S-3 Viking's ASW capabilities, along with the P-3 Orion community's reductions, leave airborne ASW assets at levels that would not be able to lend effective support for operations in the Taiwan Joint Operations Area. Furthermore, the P-3, although able to carry advanced submarine hunting equipment, will find its airframe and aircrews stretched to their operational limits due to extreme distances from their bases in the Pacific Ocean area and the robust air-to-air threat from the PRC.

With limited airborne ASW platforms and a destroyed ROC Navy, C7F will have to rely on building a coalition navy. Furthermore, during the period of building a coalition, the PRC would have shut down critical energy and food imports, crippling the Taiwanese economy, and more than likely, have sunk several billion dollars of U.S. Naval Hardware not suited for effective sea control operations. In regards to the latter, a PRC military leader was quoted in a Chinese newsletter, "the U.S. likes vain glory; if one of its aircraft carriers could be attacked and destroyed the people in the U.S. would begin to complain and quarrel loudly,

and the U.S. President would find the going harder and harder.”⁶¹ Unfortunately, he may be correct.

A recent article, published in *Air & Space Power Journal*, written by a member of the PACOM staff, suggests that “U.S. Naval and Air Force assets will be required to isolate and secure the island [Taiwan] from further aggression.”⁶² Moreover, he suggests that “American forces would probably not attack the PRC forces on the mainland, except as required to secure their own safety from future attack.”⁶³ Comparing overall U.S. airpower to the PRC, both a numerical and technological advantage favors the United States. PRC leaders best course of action would not involve air power, for this reason alone. With the battle focused on the depths of the Taiwan Strait U.S. airpower *will* be expected to take the fight to the PRC mainland. This is a result of the necessity to buy time for C7F’s assets to clear PLAN mines and prosecute submarines.

Conclusions

The PRC and the United States are on a collision course towards armed conflict over ROC independence, as spelled out in the most recent PRC white paper and the Taiwan Relations Act of 1979. Furthermore, the most recent PRC white paper singles out command of the sea and air, or *sea control*, in the Taiwan Strait, as a focal point for their force structure. Moreover, PRC strategists will focus on seizing the initiative and dealing the “first blow” versus the ROC.

The PRC’s military holds a quantitative advantage when compared to the ROC’s forces. Although a large number of the PRC’s conventional forces are garrisoned near the Taiwan Strait, the PLAN lacks a *conventional* amphibious capability to assault the coast of

Taiwan. Furthermore, the PLAN has the advantage in sea control assets in the Taiwan Strait with an overwhelming number of sea mines and submarines. Moreover, the ROC strategic leadership lives with a false sense of security in regards to their ability to defend against a PRC missile strike. The ROC will ultimately rely on the Commander, U.S. Seventh Fleet, to defend them and deter the PRC from further aggression.

Taiwan's climate will affect the timing of PRC aggression. A late summer attack will allow the PLAN submarines to benefit from adverse weather conditions in the southern Taiwan Strait, blockading its southeast entrance and approaches to adjacent international ports. The northern Taiwan Strait, although not in the monsoon season, will be blockaded by moored mines and PLAN diesel submarines, due to shallow depths. Furthermore, the high humidity and frequent cloud cover will hinder the ability of the ROCAF to effectively employ their air-to-ground weapons systems versus the PLAN. Moreover, U.S. SSN commanders will not operate effectively inside a submarine and mine blockade and into the shallow waters of the Taiwan Strait.

The most efficient scenario to subjugate Taiwan will involve a coordinated missile strike with undersea warfare. Taiwan relies heavily on oil imports and blockading the ports of arrival would shut down the ROC's ability to supply energy to its populace. Furthermore, a coordinated first strike would cripple the ROC Navy. Moreover, with a destroyed navy and no oil, the ROC strategic leadership would have limited ability to mount an adequate counter-attack.

With an inferior submarine force and inadequate sea control assets, C7F will have to rely on building a coalition navy. Furthermore, the sea control assets not forward deployed to

C7F will not be a factor in the first month of the conflict, due to excessive transit time. During this transit time, C7F fighter aircraft will have achieved air superiority in the skies high above the Taiwan Strait, leaving the PLAN awaiting someone to fight.

Recommendations

With the PRC's most likely scenario involving the pre-emptive use of undersea warfare and surface to surface missiles during the summer monsoon season, U.S. intelligence analysis should focus on PLAN exercises, more specifically submarine and mine warfare exercises. Furthermore, intelligence analysts need to scrutinize the PRC's surface-to-surface missile sites, submarine bases, and sea mine storage facilities. Moreover, C7F needs to take the aforementioned data and establish certain *cassus belli* (causal factors) regarding the PRC's operational readiness and movement, as actual hostilities will involve a surprise attack.

C7F should focus on destroying the heart of the PRC's threat to Taiwan and a United States led combined joint task force; the submarine, sea mine, and surface to surface missile sites. Furthermore, the fight needs to be taken to the PRC before they begin sowing mines, targeting the PRC's: Naval ports, mine warfare training and construction facilities, airfields, fighters and bombers, submarines, surface-to-surface and surface-to-air missile sites, and warships.

NOTES

1 Office of the U.S. Secretary of Defense. Annual Report to Congress, The Military Power of the People's Republic of China. Washington, DC: 2005. p. 38.

2 Taiwan Relations Act of 1979. It is documented in the attached bibliography as General Military Law. U.S. Code, Title 22, Chapter 48, Sections 3301-3316 (1979).

3 National Security Strategy of the United States of America, September 2002, p. 28.

4 Congress, 2005, p. 15.

5 Yoshihara, Toshi and James Holmes. "Command of the Sea with Chinese Characteristics." Orbis (Fall 2005): p. 685.

6 From "PRC: 2004 White Paper on National Defense Published." China's National Defense in 2004. Linked from Federation of American Scientists. <<http://www.fas.org/nuke/guide/china/doctrine/natdef2004.html#3>> [29 December 2005]. No page number available.

7 Although the PLAN is qualitatively weaker when compared to the US PACOM Air and Naval Forces, it would have temporary command of the sea and air in a pre-emptive strike versus Taiwan until PACOM forces arrived in the operating area, then control would be contested. Furthermore, Dr. Milan Vego, in his book, Naval Strategy and Operations in Narrow Seas, states that control of the air is a prerequisite to sea control in enclosed maritime theater. Page 124. For further discussions on the topic of sea control see the aforementioned book's chapter 7 "Sea Control and Sea Denial."

8 Center for Naval Analysis. David M. Finkelstein. "China's New Security Concept: Reading Between the Lines." Alexandria, VA: 1999.

9 Ibid.

10 Cole, Proquest.

11 Ibid.

12 PRC: 2004 White Paper, no page number available.

13 Precise numbers of PRC and ROC forces from the Office of the Secretary of defense's 2005 Annual Report to Congress, "The Military Power of the People's Republic of China," are located on pages 43-45 of the report. All of the ratios mentioned in this section were obtained by extrapolating the data from the charts in the report, pages 43-45. For the actual numbers see the list of illustrations containing the charts.

14 Annual Report To Congress, p. 44.

15 From Countering a Strategic Gambit: Keeping US Airpower employable in a China-Taiwan Conflict, by Lawrence M Martin Jr. Air & Space Journal, Fall 2005. ProQuest, no page number available.

16 Ibid., Proquest. This fact is cited in the article as being from Richard L. Russell's, "What if... 'China Attacks Taiwan!'" Parameters 31, no. 3 (Autumn 2001): p. 81.

17 Office of the Secretary of defense's 2005 Annual Report to Congress, "The Military Power of the People's Republic of China," pages 43-45. All of the ratios mentioned in this section were obtained by extrapolating the data from the charts in the report, pages 43-45.

18 Bussert, James C. "Chinese Mines Pose Taiwan Blockade Threat." Signal (June 2005): p. 70.

19 Ibid.

20 Annual Report To Congress, p. 45. The CSS-6 aka the DF-15 is a road-mobile, single-stage, solid-propellant, short-range ballistic missile system. The missile carries a 500kg single warhead and has a maximum range of 600km, the CSS-7 aka DF-11 is a road-mobile single-stage, solid-propellant, short-range ballistic missile. The basic variant DF-11 has a range of 280~350km and delivers a single-warhead of 500kg. The improved DF-11A has an extended range of over 500~700km. This information is available at SinoDefence.com through their link at: < <http://www.sinodefence.com/missile/>>. [10 February 06].

21 Chang, Rich. "PAC-3s will protect Taiwan, MND says." Mar 21, 2005. Lkd. Taipei Times Website. <<http://www.taipeitimes.com/News/taiwan/archives/2005/03/21/2003247172>> [04 February 06].

22 Ibid.

23 Ibid.

24 U.S. Seventh Fleet's Web Site, < <http://www.c7f.navy.mil/Pages/Forwardpresence.html>> [10 February 2006].

25 Ibid.

26 Ibid.

27 Ibid.

28 From Naval Research Laboratory, Monterey Marine Meteorology Division's Tropical Cyclone Forecasters' Reference Guide

< <http://www.nrlmry.navy.mil/%7Echu/chap2/se112.htm> > [10 february 06].

29 Tactical employment of the AGM 65 IR missile is based on personal experience flying the F/A-18C. The fact that the ROC Air Force fighters carry the IR Maverick missiles can be found at <<http://www.taiwanairpower.org/af/>> [11 February 2006]. Taiwan will also rely on the GBU-12 and GBU-10 laser guided bombs, also requiring excessive pilot workload and heads down time in the cockpit.

30 From the International Journal of Climatology. "Short Communication, Seasonal Variation of the Rainfall Over Taiwan. Ming-Cheng Yen and Tsing-Chang Chen. 2000.

<<http://www.public.iastate.edu/~tmchen/PDF/Seasonal%20variation%20of%20the%20rainfall%20over%20Taiwan.pdf>> [01 February 2006].

31 Taiwan's Central Weather Bureau website provides monthly mean days of precipitation for 25 locations in Taiwan, covering 1971-2000. <www.cwb.gov.tw/V4e/climate/Data/table2_e.html>

32 A typhoon is a hurricane in the western Pacific Ocean. Winds range from 60-130 knots in a typical typhoon. For more information on typhoons or monsoons visit the Naval Research Laboratory, Monterey Marine Meteorology Division's Tropical Cyclone Forecasters' Reference Guide at < <http://www.nrlmry.navy.mil/%7Echu/tropcycl.htm> >.

33 This statistical data was gather from Naval Maritime Forecast Center/Joint Typhoon Warning Center (NMFC/JTWC) slides for the Pacific Ocean < https://metoc.npmoc.navy.mil/climo/pac/pac_files/frame.htm > for the month of August.

34 Goldstein, Lyle and William Murray. "Undersea Dragons: China's Maturing Submarine Force." International Security, Volume 28, Number 4 (March 01, 2004), p. 188.

35 Naval Maritime Forecast Center/Joint Typhoon Warning Center (NMFC/JTWC) for the month of September.

36 Geology of Taiwan, MOEA.<http://www.moeacgs.gov.tw/english/twgeol/twgeol_setting.jsp> [25 January 2006].

37 From the U.S. Seventh Fleet's webpage. < <http://www.c7f.navy.mil/Pages/shippage.htm> > [12 February 06]. Both of these SSNs are forward deployed to Yokosuka, Japan and are Los Angeles-class boats.

38 China Defence Today (SinoDefence.com). EM-52 Rocket Rising Mine.

<<http://www.sinodefence.com/navy/weapon/em52mine.asp>> [03 February 06].

39 This information is available from the U.S. Defense Mapping Agency. It is located on the Nautical Chart covering Taiwan and China, NIMA reference number 94AC094004, edition number 006, September 1995.

40 Goldstein and Murray, "Dragons," p. 185.

41 Ibid., p.186.

42 Government Information Office, Republic of China (Taiwan). "Taiwan Yearbook" Geography-Taiwan.
<http://english.www.gov.tw/Yearbook/index.jsp?catid=23&recordid=52653> [03 February 06].

43 Congress 2005.

44 U.S. Department of Defense. "The Security Situation in the Taiwan Strait." Report to Congress. (26 Feb 1999)
<http://www.defenselink.mil/pubs/twstrait_02261999.html> [25 January 06].

45 Congress 2005, p. 41.

46 From EIA country analysis brief, <<http://www.eia.doe.gov/emeu/cabs/taiwan.html>> [January 2006].

47 Ibid.

48 Ibid.

49 Willingham, Stephen. "Navy Mine Blueprint Proffers Innovator's Dilemma." National Defense. January 2001.
<http://www.nationaldefensemagazine.org/issues/2001/jan/navy_mine.htm> [27 December 2005].

50 Goldstein, Lyle and Lieutenant Commander Bill Murray, U.S. Navy. "China's Subs Lead the Way." U.S. Naval Institute Proceedings (March 2003): p. 60.

51 Ibid., p. 60.

52 In general terms sea control means to obtain control of the entire theater, or the major part of the theater, so that one can employ one's fleet whenever and wherever required without threat from the opponent. From, Milan Vego's Naval Strategy and Operations in Narrow Seas, Frank Cass Publishers, London, 2003, p.116.

53 Sealift carried 90% of the cargo required for DESERT SHIELD/STORM. Without control of the sea, that cargo would have been at risk, slowing the deployment, threatening our ability to charter foreign merchant ships and significantly increasing costs. Because our naval forces were on station and ready, we were never seriously challenged, and sea control was assured from the outset. From Department of the Navy "Lessons Learned and Summary," Operation DESERT STORM-Naval Historical Center-Washington Navy Yard, Washington DC, <<http://www.history.navy.mil/wars/dstorm/ds6.htm>>

54 Patch, p. 42.

55 From the U.S. Seventh Fleet's website, <http://www.c7f.navy.mil/Pages/shippage.htm>> [03 February 06].

56 From <<http://www.fas.org/man/dod-101/sys/ship/mhc-51.htm>> [January 2006].

57 These ships are designed to travel at slow speeds. They are constructed of materials to mitigate the magnetic signature, reducing the chance of attracting sea mines while they are operating. <<http://www.fas.org/man/dod-101/sys/ship/mhc-51.htm>> and <<http://www.fas.org/man/dod-101/sys/ship/mcm-1.htm>> The Avenger-class is advertised to travel at 14 knots, something not attainable in the open ocean transiting to the Taiwan Strait Area.

58 Flight IIA (starting with DDG 79) of the Arleigh Burke-class ships incorporate a hangar for embarked helicopters and support. The ships prior to Flight IIA only have the ability to recover and refuel helicopters, lacking the ability for sustained airborne ASW operations. <<http://www.fas.org/man/dod-101/sys/ship/ddg-51.htm>>

59 From <<http://www.globalsecurity.org/military/systems/aircraft/mh-53e.htm>>

60 From Undersea Dragons...quoting Vice Adm. John Grossenbacher, U.S. Navy, "Remarks at 2002 NDIA Clambake," Submarine Review, January 2002, p. 12. Vice Admiral John Grossenbacher retired as the Commander, Naval Submarine Forces; Commander, Submarine Force U.S. Atlantic Fleet; Commander, Submarines Allied Command Atlantic and Commander, Task Force (CTF) 84 in 2003 after 33 years of distinguished service.

61 Undersea Dragons, p. 191. Quoting [PRC] Maj. Gen Huang Bin.

62 From Countering a Strategic Gambit: Keeping US Airpower employable in a China-Taiwan Conflict. Air & Space Power Journal, Fall 2005. Proquest.

63 Ibid.

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Illustrations

Figure 1

Taiwan Strait Military Balance, Naval Forces			
China			Taiwan
	Total	East and South Sea Fleets	Total
Personnel	290,000	140,000	60,000
Destroyers	21	13	6
Frigates	43	34	21
Tank Landing Ships	20	20	12
Medium Landing Ships	23	15	4
Diesel Submarines	51	29	4
Nuclear Submarines	6	0	0
Coastal Patrol (Missile)	51	34	50
Note: The PLA Navy has a large fleet that includes 64 major surface combatants, approximately 55 attack submarines, more than 40 medium and heavy amphibious lift ships, and some 50 coastal missile patrol craft. Two-thirds of those assets are located in the East and South Sea Fleets. In the event of a major Taiwan conflict, both fleets would be expected to participate in direct action against the Taiwan Navy. The North Sea Fleet would be responsible primarily for protecting Beijing and the northern coasts, but could provide mission critical assets to support the other fleets.			

Figure 2

Taiwan Strait Military Balance, Air Forces			
China			Taiwan
Aircraft	Total	Within range of Taiwan	Total
Fighters	1,500	425	420
Bombers	780	280	0
Transport	500	50	40
Note: The PLAAF and PLANAF have a total of around 2,600 combat aircraft: air defense and multi-role fighters, ground attack aircraft, fighter-bombers, and bombers. An additional 470 older fighters and bombers are assigned to PLA flight academies or R&D. The two air arms have over 90 surveillance and reconnaissance aircraft with photographic, surface search, and airborne early warning sensors. The PLAAF and PLANAF have 500 transports. The majority of PLAAF and PLANAF aircraft are based in the eastern part of the country. Currently, more than 700 aircraft could conduct combat operations against Taiwan without refueling. Taiwan has some 400 fighters of various types.			

These tables are located in the 2005 SECDEF's "Annual Report to Congress," pages 43-45.

Figure 3

China's Missile Forces		
China's Missile Inventory Total	Launchers/ Missiles	Estimated Range
CSS-4 ICBM	20/20	8,460+ km
CSS-3 ICBM	10-14/20-24	5,470+ km
CSS-2 IRBM	6-10/14-18	2,790+ km
CSS-5 MRBM Mod 1/2	34-38/19-23	1,770+ km
JL-1 SLBM	10-14/10-14	1,770+ km
CSS-6 SRBM	70-80/230-270	600 km
CSS-7 SRBM	100-120/420-460	300 km
DF-31 ICBM	DEVELOPMENTAL	7,250+ km
DF-31A ICBM	DEVELOPMENTAL	11,270+ km
Note: China's SRBM force has grown significantly in the past few years. China's Second Artillery now has at least five operational SRBM brigades; another brigade is deployed with the PLA ground forces. All of these units are deployed to locations near Taiwan.		

Figure 4

Taiwan Strait Military Balance, Ground Forces			
	China		Taiwan
	Total	Taiwan Strait Area	Total
Personnel (Active)	1.6 million	375,000	200,000
Group Armies	18	9	
Infantry Divisions/Brigades (including airborne)	20/20	9/11	0/25
Armor Divisions/Brigades	10/10	4/4	0/5
Mech Infantry Divisions/Brigades	5/5	3/1	0/3
Artillery Divisions/Brigades	5/15	3/5	0/0
Marine Divisions/Brigades	0/2	0/2	1/3
Tanks	6,500	2,500	1,900
Artillery Pieces	11,000	5,500	4,400
Note: The PLA active ground forces are organized into Group Armies. Infantry, armor, and artillery units are organized into a combination of divisions and brigades deployed throughout the PLA's seven Military Regions (MRs). A significant portion of these assets are deployed in the Taiwan Strait area, specifically the Nanjing, Guangzhou, and Jinan military regions. In a major Taiwan conflict, personnel, units, and equipment from other military regions would augment existing combat power in the Taiwan Strait area. In 2004, Taiwan began transforming motorized rifle and armored infantry brigades to mechanized infantry.			

These tables are located in the 2005 SECDEF's "Annual Report to Congress," pages 43-45.

Figure 5

